



1764<sup>#3</sup>

DOCKET NO.: 38IS-4766

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application of:

David J. Ecker, et al.

Serial No.: 09/863,158

Group Art Unit: Not Yet Assigned

Filing Date: May 23, 2001

Examiner: Not Yet Assigned

For: CHEMICAL SYNTHESIS APPARATUS EMPLOYING A DROPLET  
GENERATOR

DATE OF DEPOSIT: 3 JULY 2001  
I HEREBY CERTIFY THAT THIS PAPER IS BEING  
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Paul K. Legaard  
TYPED NAME: Paul K. Legaard  
REGISTRATION NO.: 38,534

Assistant Commissioner for Patents  
Washington DC 20231

Dear Sir:

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INFORMATION DISCLOSURE STATEMENT

Pursuant to 37 C.F.R. §1.56 and in accordance with 37 C.F.R. §§1.97-1.98, information relating to the above-identified application is hereby disclosed. Inclusion of information in this statement is not to be construed as an admission that this information is material as that term is defined in 37 C.F.R. §1.56(b).

- ☒ In accordance with §1.97(b), since this Information Disclosure Statement is being filed either within three months of the filing date of the above-identified application, within three months of the date of entry into the national stage of the above identified application as set forth in §1.491, before the mailing date of a first Office Action on the merits of the above-identified application, or before the mailing date of a first office action after the filing of request for continued examination under §1.114, no additional fee is required.

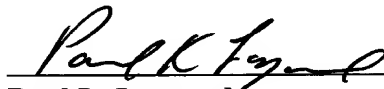
- ☐ In accordance with §1.129(a), this Information Disclosure Statement is being filed in connection with ☐the first or ☐second After Final Submission, therefore:
- ☐ Certification in Accordance with §1.97(e) is attached; or
- ☐ The fee of \$180.00 as set forth in §1.17(p) is attached.
- ☐ In accordance with §1.97(c), this Information Disclosure Statement is being filed after the period set forth in §1.97(b) above but before the mailing date of either a Final Action under §1.113 or a Notice of Allowance under §1.311, or before an action that otherwise closes prosecution in the application, therefore:
- ☐ Certification in Accordance with §1.97(e) is attached; or
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- ☐ In accordance with §1.97(d), this Information Disclosure Statement is being filed after the mailing date of either a Final Action under §1.113 or a Notice of Allowance under §1.311 but before, or simultaneously with, the payment of the Issue Fee, therefore included are: Certification in Accordance with §1.97(e); and the submission fee of \$180.00 as set forth in §1.17(p).
- ☐ Copies of each of the references listed on the attached Form PTO-1449 are enclosed herewith.
- ☒ Copies of references listed on the attached Form PTO-1449 are enclosed herewith EXCEPT THAT:
- ☒ In view of the voluminous nature of reference AS, and the likelihood that these references are available to the Examiner, copies are not enclosed herewith.

- ☐ In accordance with §1.98(d), copies of the following references listed on the attached Form PTO-1449 are not enclosed herewith because they were previously cited by or submitted to the U.S. Patent and Trademark Office in patent application(s) for which a claim for priority under 35 U.S.C. §120 have been made in the instant application:
- ☒ Copies of references **AA-AU, AY-BK, BO-CB, CD, CF-CU, CX-DB and DC-DL** listed on the attached Form PTO-1449 were previously cited by or submitted to the Patent and Trademark Office in prior application Serial No. **09/309,925**, filed **September 21, 1994**; copies of references **AW-AX, BL-BN, C, CE, CV and DC** listed on the attached Form PTO-1449 were previously cited by or submitted to the Patent and Trademark Office in prior application Serial No. **09/778,876**, filed **January 2, 1997**; copies of references **AV, CW and DM-DQ** listed on the attached Form PTO-1449 were previously cited by or submitted to the Patent and Trademark Office in prior application Serial No. **09/313,403**, filed **May 18, 1999**.
- ☐ If any of the foregoing publications are not available to the Examiner, Applicant will endeavor to supply copies at the Examiner's request.

Please charge any deficiency or credit any overpayment to Deposit Account No. 23-3050.  
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There are no listed references which are not in the English language.

Date: 3/5/01

  
Paul L. Legaard  
Registration No. 38,534

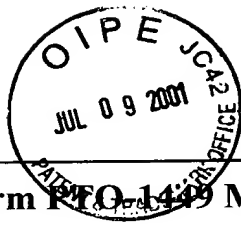
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<b>Form PTO-1449 Modified</b>  List of Patent and Publications Cited by Applicant (Use several sheets if necessary)  U.S. Department of Commerce Patent and Trademark Office		Docket No. <b>ISIS-4766</b>	Serial No. <b>09/863,158</b>
		Applicant <b>David J. Ecker et al.</b>	
		Filing Date <b>May 23, 2001</b>	Group <b>Not Yet Assigned</b>
<b>OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)</b>			
	<b>AA</b>	Alul et al., "Oxaryl-CPG: a labile support for synthesis of sensitive oligonucleotide derivatives", <i>Nucleic Acids Research</i> , <b>1991</b> , 19, 1532-1527	
	<b>AB</b>	Beaucage et al., "Advances in the Synthesis of Oligonucleotides by the Phosphoramidite Approach", <i>Tetrahedron</i> , <b>1992</b> , 48, 2223-2311	
	<b>AC</b>	Berner et al., "Studies on the role of tetrazole in the activation of phosphoramidite", <i>Nucleic Acids Research</i> , <b>1989</b> , 17, 853	
	<b>AD</b>	Blackburn and Gait (eds.), <i>Nucleic Acids in Chemistry and Biology</i> , IRL Press, <b>1990</b> , 112-130	
	<b>AE</b>	Dahl et al., "Mechanistic studies on the phosphoramidite coupling reaction in oligonucleotide synthesis", <i>Nucleic Acids Research</i> , <b>1987</b> , 15, 1729-1743	
	<b>AF</b>	Dahl, O. et al., "Preparation of Nucleoside phosphorothioates, Phosphorodithioates and Related Compounds", <i>Sulfur Reports</i> , <b>1991</b> , 11, 167-192	
	<b>AG</b>	Daniels et al., Poster #T81 at the Protein Society meeting, San Diego, CA, <b>1989</b>	
	<b>AH</b>	Eckstein, F., "Nucleoside Phosphorothioates", <i>Ann Rev. Biochem.</i> , <b>1985</b> , 54, 367-402	
	<b>AI</b>	Fitzpatrick et al., presented in a paper entitled "Membrane Supports for DNA synthesis", at the <b>1993</b> "Innovations and Perspectives in Solid-Phase Synthesis", Conference at the University of Oxford	
	<b>AJ</b>	Glass Fiber Filter Plates, <i>Science</i> , <b>June 17, 1994</b> , 264, 1791	
	<b>AK</b>	Human Genome 1991-92 Program Report U.S. Department of Energy, <b>June, 1992</b>	
	<b>AL</b>	Kresse, J. et al., "The use of S-2-cyanoethyl phosphorothioate in the preparation of oligo 5'-deoxy-5'thiothymidylates", <i>Nucleic Acids Research</i> , <b>1975</b> , 2, 1-9	
	<b>AM</b>	Lipshutz, R., "Likelihood DNA Sequencing by Hybridization", <i>J. Biomolecular Structure &amp; Dynamics</i> , <b>1993</b> , 11, 637-653	
<b>EXAMINER</b>		<b>DATE CONSIDERED</b>	

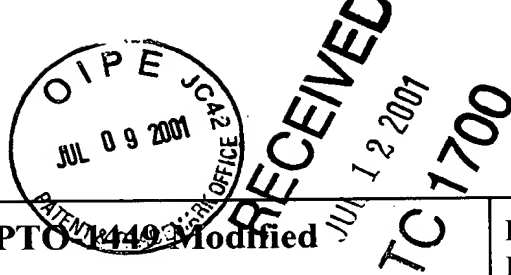


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<b>OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)</b>			
	<b>AN</b>	Merrifield, B., "Solid Phase Synthesis", <i>Science</i> , <b>1986</b> , 232, 341-347	
	<b>AO</b>	Merrifield, B., "Solid Phase Peptide Synthesis I. The Synthesis of a Tetrapeptide", <i>J. Am. Chem. Soc.</i> , <b>1963</b> , 85, 2149-2154	
	<b>AP</b>	Nielsen et al., "Thermal Instability of Some Alkyl Phosphorodiamidites", <i>J. Chem. Res.</i> , <b>1986</b> , 26-27	
	<b>AQ</b>	Sekine et al., "Synthesis and Properties of S,S-Diaryl Nucleoside Phosphorodithioates in Oligonucleotide Synthesis", <i>J. Org. Chem.</i> , <b>1979</b> , 44, 2325-2326	
	<b>AR</b>	Southern et al., "Analyzing and Comparing Nucleic Acid Sequences by Hybridization to Arrays of Oligonucleotides: Evaluation Using Experimental Models", <i>Genomics</i> , <b>1992</b> , 13, 1008-1017	
*	<b>AS</b>	Stewart and Young, "Solid Phase Peptide Synthesis", 2nd Ed., Pierce Chemical Company, Illinois, <b>1984</b>	
	<b>AT</b>	Wright et al., "Large Scale Synthesis of Oligonucleotides via Phosphoramidite Nucleosides and a High-loaded polystyrene Support", <i>Tetra. Letters</i> , <b>1993</b> , 34, 3373-3376	
	<b>AU</b>	The MultiScreen Assay System Millipore Advertisement, <i>Science</i> , <b>Sept. 9, 1994</b> , Vol. 265	
	<b>AV</b>	Frank, R., "Strategies and Techniques in Simultaneous Solid Phase Synthesis Based on the Segmentation of Membrane Type Supports," <i>Bioorganic &amp; Medical Chemistry Letters</i> , <b>1993</b> , 3, 425-430	
	<b>AW</b>	Daniels, et al., "Poster #T81 at the protein society meeting," San Diego, CA. <b>1989</b>	
	<b>AX</b>	Southern, et al., "Analyzing and comparing nucleic acid sequences by hybridization to arrays of oligonucleotides: Evaluation using experimental models," <i>Genomics</i> , <b>1992</b> , 13, 2008-2017	
<b>EXAMINER</b>		<b>DATE CONSIDERED</b>	

\* A copy of this reference will not be forwarded to the U.S. Patent and Trademark Office since it is believed to be too voluminous and easily obtainable by the Examiner.



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**U. S. PATENT DOCUMENTS**

Examiner Initial		Document No.	Date	Name	Class	Subclass
	AY	3,531,258	11/16/67	Merrifield et al.	23	252
	AZ	4,353,989	10/12/82	Bender et al.	435	287
	BA	4,362,699	12/07/82	Verlander et al.	422	131
	BB	4,415,732	11/15/83	Caruthers	536	27
	BC	4,458,066	07/03/84	Caruthers	536	27
	BD	4,483,964	11/20/84	Urdea et al.	525	54.11
	BE	4,500,707	02/19/85	Caruthers	536	27
	BF	4,517,338	05/14/85	Urdea et al.	525	54.11
	BG	4,562,157	12/31/85	Lowe et al.	435	291
	BH	4,598,049	07/01/86	Zelinka et al.	435	287
	BI	4,668,476	05/26/87	Bridgham et al.	422	62
	BJ	4,668,777	05/26/87	Caruthers	536	27

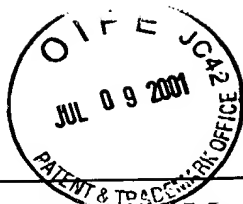
**FOREIGN PATENT DOCUMENTS**

Examiner Initial		Document No.	Date	Country	Translation YES NO	
	BK	0138075	09/14/84	EPO		
	BL	WO 89/10977	11/16/89	PCT		
	BM	WO 90/00626	01/25/90	PCT		
	BN	WO 90/03382	04/05/90	PCT		
	BO	WO 91/16457	10/31/91	PCT		

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<b>Examiner Initial</b>		<b>Document No.</b>	<b>Date</b>	<b>Name</b>	<b>Class</b>	<b>Subclass</b>	
	<b>BP</b>	4,671,941	06/09/87	Niina et al.	422	131	
	<b>BQ</b>	4,701,304	10/20/87	Horn et al.	422	62	
	<b>BR</b>	4,725,677	02/16/88	Koster	536	27	
	<b>BS</b>	4,728,502	03/01/88	Hamil	422	116	
	<b>BT</b>	4,746,490	05/24/88	Saneii	422	62	
	<b>BU</b>	4,748,002	05/31/88	Neimark et al.	422	116	
	<b>BV</b>	4,816,513	03/28/89	Bridgham et al.	525	54.11	
	<b>BW</b>	4,861,866	08/29/89	Durum et al.	530	333	
	<b>BX</b>	4,866,166	09/12/89	Wigler	536	27	
	<b>BY</b>	4,882,127	11/21/89	Rosenthal et al.	422	50	
	<b>BZ</b>	4,923,901	05/08/90	Koester	521	53	
	<b>CA</b>	4,973,679	11/27/90	Caruthers	536	27	
<b>FOREIGN PATENT DOCUMENTS</b>							
<b>Examiner Initial</b>		<b>Document No.</b>	<b>Date</b>	<b>Country</b>	<b>Translation</b>		
					<b>YES</b>	<b>NO</b>	
	<b>CB</b>	WO 92/00091	01/09/92	PCT	XX		
	<b>CC</b>	WO 92/10588	06/25/92	PCT	XX		
	<b>CD</b>	WO 92/20702	11/26/92	PCT	XX		
	<b>CE</b>	WO 93/17126	09/02/93	PCT	XX		
	<b>CF</b>	WO 93/22678	11/11/93	PCT	XX		
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Examiner Initial		Document No.	Date	Name	Class	Subclass
	CG	5,019,348	05/28/91	Ohms et al.	422	63
	CH	5,073,495	12/17/91	Anderson	435	284
	CI	5,106,585	04/21/92	Minami et al.	422	68.1
	CJ	5,112,575	05/12/92	Whitehouse et al.	422	116
	CK	5,112,736	05/12/92	Caldwell et al.	435	6
	CL	5,132,418	07/21/92	Caruthers	536	27
	CM	5,143,854	09/01/92	Pirrung et al.	436	518
	CN	Re.34,069	09/15/92	Koster	536	27
	CO	5,174,962	12/29/92	Beattie et al.	422	78
	CP	5,175,209	12/29/92	Beattie et al.	525	54.11
	CQ	5,182,366	01/26/93	Huebner et al.	530	334
	CR	5,198,368	03/1993	Khalil et al.	436	178

**FOREIGN PATENT DOCUMENTS**

Examiner Initial		Document No.	Date	Country	Translation YES NO	
	CS	WO 94/05394	03/17/94	PCT		
	CT	WO 94/17412	08/04/94	PCT		
	CU	WO 94/18226	08/18/94	PCT		
	CV	WO 95/25116	09/21/95	PCT		
	CW	0 119 573	09/26/84	EPO		

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**U. S. PATENT DOCUMENTS**

Examiner Initial		Document No.	Date	Name	Class	Subclass
	<b>CX</b>	5,202,418	04/13/93	Lebl et al.	530	334
	<b>CY</b>	5,210,264	05/11/93	Yau	558	167
	<b>CZ</b>	5,221,518	06/22/93	Mills	422	62
	<b>DA</b>	5,240,680	08/31/93	Zuckermann et al.	422	67
	<b>DB</b>	5,243,540	09/07/93	Van Albert et al.	364	500
	<b>DC</b>	5,449,754	09/12/95	Nishioka	530	334
	<b>DD</b>	5,252,296	10/12/93	Zuckermann et al.	422	116
	<b>DE</b>	5,288,464	02/22/94	Nokihara	422	101
	<b>DF</b>	5,288,468	02/22/94	Church et al.	422	116
	<b>DG</b>	5,324,483	06/28/94	Cody et al.	422	131
	<b>DH</b>	5,338,831	08/16/94	Lebl et al.	530	334
	<b>DI</b>	5,342,585	08/30/94	Lebl et al.	422	131
	<b>DJ</b>	5,356,596	10/18/94	Nokihara et al.	422	131
	<b>DK</b>	5,362,447	11/08/94	Nokihara	422	131
	<b>DL</b>	5,368,823	11/29/94	McGraw et al.	422	134
	<b>DM</b>	5,188,733	02/23/93	Wang et al.	210	321.84
	<b>DN</b>	5,108,926	04/28/92	Klebe	435	284
	<b>DO</b>	5,338,688	08/16/94	Deeg, et al.	436	180
	<b>DP</b>	5,474,796	12/12/95	Brennan	427	2.13
	<b>DQ</b>	5,847,105	12/08/98	Baldeschieler	536	25.3
	<b>DR</b>	5,925,732	07/20/99	Ecker, et al.	530	334

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